

By the present amendment, all of the claims previously in the case are cancelled in favor of a new set of claims 52-57, as foretold at the recent interview. The new claims are believed to be free of the prior art of record, suitably definite, and adequately supported by the original disclosure.

Despite the presentation of a new set of claims, it is believed that the present response can and should appropriately be entered after final rejection, as the present response reduces from 13 to seven the number of pending claims; the new claims obviate the new matter rejection applied at Item 2 of the outstanding Official Action; the new claims recite features previously claimed, albeit not in precisely the same combination now set forth; and, not least, the present amendment is believed to place the application in condition for allowance, for the reasons discussed below.

Support for the Recitations of the New Claims

As noted above, the new claims principally contain recitations already appearing in the previous claims. Applicants furthermore note support for the following recitations:

- the hop extract contains "at least 20% anhydrogalacturonic acid on a dry weight basis of extracted material." Previous claims 50 and 51 recited that the hop extract contains at least 20% AUA, which in turn is supported for example by the extracts set forth in Annex 5 on page 17 of the specification.

The further qualification that the 20% AUA is calculated on a dry weight basis of extracted material is supported for

example by the specification at page 5, line 11 and page 6, lines 33-35, wherein it is noted that the extract is expressed in terms of "d.s.", this being a recognized abbreviation for "dry substance". See also the extraction technique described at page 14, lines 1-17 of the specification, wherein the pectin extract is obtained as a dried material.

- The hop extract is added "after the commencement of wort boiling." See the specification at page 3, lines 8-14, teaching that wort boiling at neutral pH breaks down the pectins in hops, and page 4, lines 10-15, teaching that the extract must be added "late enough" in the wort boiling process to prevent that breakdown from occurring to an unacceptable extent. The recitation of not earlier than 30 minutes before the end of wort boiling is of course a feature of the original claim 5.

The Art of Record Does Not Render Any
Of New Claims 52-57 *Prima Facie* Obvious

Turning now to the issues raised in the Outstanding Official Action, as noted above the new claims 52-57 plainly avoid the new matter rejection applied at Items 2-3, in that none of the new claims seeks to exclude organic solvent extraction.

The only other grounds of rejection were the repeated rejection of previous claims 18, 20-29, 31 and 50 under 35 USC §103(a) as allegedly being unpatentable over Bukovskii et al. alone (Item 5 of the Official Action), or as allegedly being unpatentable over

Bukovskii et al. in view of The Practical Brewer and in further view of Food Colloids (pp.18-35) (Item 6 of the Official Action). Those rejections are respectfully traversed, for the reasons that follow.

Regarding Bukovskii et al., in addition to relating to beet pectin rather than hop pectin, that reference teaches that the beet pectin must be added prior to the commencement of wort boiling, in contrast to the claimed method. The attached English translation of Bukovskii et al shows that, indeed, the beet pectin must be mixed with the wort 15-20 minutes before the commencement of wort boiling (see page 2, lines 22-27 of the translation, and each of Examples 1-3). Moreover, the wort is then boiled for two hours in each of the Examples.

Therefore, in addition to Bukovskii et al.'s failure to disclose or suggest the use of hop pectin in the first instance, it further fails to disclose, and indeed teaches rather strongly away from, any process in which a hop extract would be added after commencement of wort boiling and not earlier than 30 minutes before the end of wort boiling, as is recited in the new independent claim 52. In the case of Bukovskii's two hour wort boiling, this would entail adding the beet pectin no sooner than 1 $\frac{1}{2}$ hours after commencement of wort boiling, something as to which the reference gives no hint whatsoever.

The further reliance on The Practical Brewer and Food Colloids (pp.18-35) at Item 6 of the Official Action does not bring Bukovskii et al. any closer to the claimed invention in this respect. In particular, those references were cited solely for the proposition

that it would have been obvious to select hops rather than beet as the source of the pectin used by Bukovskii et al. While applicants respectfully disagree that the skilled artisan would have been so motivated, in any event the proposed combination of references is no more pertinent than Bukovskii alone as to the time of pectin addition, and, in particular, the references considered collectively do not render *prima facie* obvious a process as claimed wherein a hop extract containing at least 20% anhydrogalacturonic acid on a dry weight basis of extracted material, is added to a beer preparation after commencement of wort boiling and not earlier than 30 minutes before the end of wort boiling.

New claims 52-57 are therefore believed to overcome all of the rejections of record.

At the interview, the Examiner suggested that alcohol extracts of hops might inherently be enriched in hop pectins, and therefore queried whether the new claims are sufficiently distinct from conventional post hopping techniques wherein finish hops are added near the end of wort boiling or after completion of wort boiling. In response, applicants note that the extraction techniques described in the specification do not seem to indicate that an alcohol hops extract would inherently be enriched in pectins, given that applicants used hot acidified water to extract the pectins, and thereafter used alcohol to precipitate them (see, e.g., page 14, lines 1-17 of the specification). Thus, given the ability of alcohol to precipitate hop pectins from an aqueous acidic solution, it would not seem likely that alcohol would serve to extract the pectins from

native hops to any significant degree.

However, even assuming *arguendo* that some known hop preparation might have been inherently enriched in hops relative to native hops, the present claims plainly avoid any unintended reading thereon, in view of the requirement that the extract used in the claimed method contains at least 20% AUA on a dry weight basis of extracted material. As was discussed at the interview, the recited AUA content connotes a presence of hop pectins at much more elevated levels in the extract than would occur accidentally or inherently in some unrecognized prior art form.

At the interview, the Examiner also queried whether new claims such as those presented herewith might cause Hoelle et al., U.S. Patent No. 3,222,181, to again become relevant. However, it is believed to be apparent that all of claims 52-57 are likewise not *prima facie* obvious in view of Hoelle et al., whether that reference is considered alone or in combination with any of the other prior art of record.

In particular, Hoelle at column 4, line 64 through column 5, line 3, and column 6, lines 18-45, discloses that the waste remaining after the organic extraction is leached with hot water to extract, *inter alia*, pectin (column 4, line 66). However, Hoelle leaches at high pH (column 6, lines 38-42), which, in view of the teaching of the present specification, would not actually be expected to extract significant amounts of intact pectin. How much (if any) pectin Hoelle actually extracts from the waste cannot be ascertained, as Hoelle does not even attempt to precipitate pectins, but rather merely

concentrates the alkaline supernatant (column 6, lines 25-26). Thus, there is no basis in Hoelle et al. to suppose that the concentrated alkaline supernatant described at column 6, lines 25-26 contains anything like the minimum 20% AUA on dry weight basis required by the present claims.

Furthermore, the reference departs still further from anything comparable to the claimed method in its requirement that the waste extract is not added directly to the wort, but rather is first recombined with the material extracted by the preliminary organic extraction (column 4, line 75 - column 5, line 3; column 6, lines 46-49), thereby further diluting any pectins that might be present in the concentrated alkaline supernatant. Indeed, claim 2 of Hoelle et al teaches that the combined extract should comprise 70-80% of the organic extract, and only 20-30% of the secondary aqueous alkaline waste extract, which latter secondary component, as noted above, may or may not actually contain pectins in some undisclosed amount.

Lastly, nothing in Hoelle et al. suggests that a hops extract of whatever composition should be added to the wort after commencement of wort boiling and not earlier than 30 minutes before the end of wort boiling, as required by the new independent claim 52.

As discussed above, and to the contrary, the teaching of Bukovskij et al. is that, when dealing with pectins, they are to be added to the wort 15-20 minutes before the commencement of a wort boiling of two hour duration.

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Hoelle
or
Buk*

The above discussion is believed to demonstrate wherein the new independent claim 52, which would be the only independent claim

pending upon entry of the present amendment, is patentable in relation to the prior art of record. Applicants furthermore believe that the dependent claims are independently patentable for a variety of reasons; however, as those claims are believed also to be allowable at least by virtue of their dependency from an allowable claim 52, it is not believed necessary to discuss the reasons for the independent patentability of the dependent claims at this stage.

In view of the recent interview and the present amendment and the foregoing remarks, therefore, it is believed that this application has been placed in condition for allowance with new claims 52-57. Allowance and passage to issue on that basis are accordingly respectfully requested.

Respectfully submitted,

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Sources of information taken into account during
examination

1. Inventors Certificate of the USSR No. 507640, cl. C12 G
5 1/06, 1973.
2. US Patent No. 3515560, cl. 99-49, published in 1970.



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Translator's notes

Column/line

1/5 The word "вина" (of wine) is used here, although the text is about beer.

5 3/25 The text again uses "вина", but presumably "пива" (of beer) is meant.

3/27 The word "пена" should have an initial capital as this appears to be the start of a new sentence.